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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,957	04/19/2006	Soledad Penades	0380-P03930US0	1468

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1601 MARKET STREET
SUITE 2400
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EXAMINER	
DO, PENSEE T	

ART UNIT	PAPER NUMBER
1641	

MAIL DATE	DELIVERY MODE
03/03/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/559,957	PENADES ET AL.	
	Examiner	Art Unit	
	Pensee T. Do	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) *1-69 and 73-80* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *70-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-80* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/17/07; 4/19/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____.

DETAILED ACTION

Priority

This application 10559957, PG Pub. No. 20060233712 filed 04/19/2006 is a national stage entry of PCT/GB04/02408 , International Filing Date: 06/07/2004 claims foreign priority to 0313259.4 , filed 06/09/2003.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

Applicant's election without traverse of group V, claims 70-72 in the reply filed on November 3, 2009 is acknowledged.

Information Disclosure Statement

IDS papers submitted on August 17, 2007 and April 19, 2006 are acknowledged and considered.

Claims Status

Claims 70-72 are being examined.

Claims 1-69 and 73-80 are withdrawn from further consideration.

Claim Objections

Claims 70-72 are objected to because of the following informalities: claim 70 still depends on a non-elected claim 1. Please rewrite claim 70 in the independent form. Appropriate correction is required.

Claimed Invention

70. (New) A method for performing magnetic resonance imaging (MRI) of a site in a patient, said method comprising administering to said patient a MRI contrast agent comprising nanoparticles according to claim 1.

1. (Original) A magnetic nanoparticle having a core of metal atoms, wherein the core is covalently linked to a plurality of ligands and has a diameter of less than 2.5nm.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 70 and 71 are rejected under 35 U.S.C. 102(b) as being anticipated by Fahlvik et al. (US 6,207,134).

Fahlvik teaches a method for performing magnetic resonance imaging (MRI) of a site in a patient by administering to the body of a human, mammalian or non-human a contrast agent and generating a image of at least a part of said body into which said agent distributes by MR or ET or magnetometry (see col. 8, lines 11-18). The contrast agent comprises a metallic core of less than 100 nm in size (see col. 4, lines 52-53) having size of from 1 to 100 nm (see col. 2, line 65). The metallic core is covalently

linked to a plurality of ligands or coating agents such as natural and synthetic structural type polysaccharides, polyaminoacids, physiologically tolerable synthetic polymers (col. 2, line 67-col. 3, line 3; lines 32-35). Regarding claim 71, Fahlvik teaches that the contrast agent is administered to the body and an image of at least a part of said body is generated. Thus, since the body includes lungs and thus Fahlvik teaches imaging the lungs of such body.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annan et al. (US 6,270,748) in view of Hainfield et al. (US 6,955,639 filed on March 12, 2003).

Annan teaches a method of performing magnetic resonance imaging by administering to a patient an MRI contrast agent (see col. 13, lines 63-66; col. 14, lines 14-16) comprising magnetic nanoparticles having a core loaded with metal ions such as Gadolinium (Gd) (see col. 3, lines 63-66). Annan further teaches that the core is surrounded by a shell which is functionalized to promote specific interactions with tissues, making the agent tissue specific (see col. 3, lines 69-62). Regarding the size of the core, Annan teaches that the size of the nanoparticles is less than 1 microns which is equivalent to 1000 nanometers (nm) (see col. 3, lines 40-48). For claim 71, Annan

teaches administering the contrast agent/metal-loaded nanoparticles into the subject/patient to allow imaging specific organs, regions of the body or cell lines. (see col. 3, lines 42-45). Thus, the "specific organs of the body" mentioned by Annan include lungs since lungs are organs of the body.

However, Annan fails to teach that the core is covalently linked to a plurality of ligands and that the core is less than 2.5 nm or less than 1.0 nm.

Hainfield teaches using metal nanoparticles of size range from 0.5 to 400 nm in diameter to enhance radiation effects and x-rays. The metal nanoparticles are administered intravenously, intra-arterially or locally to achieve specific loading in and around the target tissue. (see abstract). The metal particles are linked covalently to chemical and/or biochemical moieties such as Fab' antibody fragments (ligands) which bind specifically with the target tissue (see col. 11, lines 14-35). The metal core can be gadolinium (see col. 9, line 26). The size range of the core is about 0.8 to 500 nm in diameter (see col. 9, lines 12-14). Hainfield teaches that Gadolinium is used as an MRI contrast agent (see col. 10, lines 36-42). Hainfield teaches that the advantage of using smaller size nanoparticles of range 0.8-10 nm is because these particles of such size range penetrate the endothelial barrier of blood vessels and can diffuse throughout the parenchyma of the targeted tissue. (see col. 12, lines 44-47; lines 60-64).

Since Hainfield teaches that Gadolinium metal is used as an MRI contrast agent and the nanoparticles are administered to a subject to target specific organs of the body and Annan also teaches using Gadolinium in MRI and the nanoparticles are administered to a subject to target specific organs/tissue of the body, it would have

been obvious to one of ordinary skills in the art to use the particle size range of 0.8-400 nm as taught by Hainfield and covalently immobilize ligands on the core of the nanoparticles in Annan so that such ligands can specifically bind to the target organs/tissue being imaged for the advantage that small size range nanoparticles (0.8 - 400 nm) can penetrate the endothelial barrier of blood vessels and can diffuse throughout the parenchyma of the targeted tissue. One of ordinary skills in the art would have a reasonable success in combining these two teachings because both references teaches using metal nanoparticles, specifically gadolinium metal nanoparticles to specifically target an organ/tissue of a subject and that these nanoparticles must be administered into the body of a subject.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Shibuya can be reached on 571-272-0806. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pensee T. Do/
Examiner, Art Unit 1641
/Jacob Cheu/
Primary Examiner, Art Unit 1641